REMARKS

Reconsideration of this application as amended is respectfully requested.

In the Office Action, claims 1-87 are pending and rejected. In this response, no claim has been canceled. Claims 1, 3-5, 8, 24-26, 28, 30-32, 35, 51-53, 55, 57-59, 62, 78-80, and 82 have been amended. No new matter has been added.

Claims 1-87 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,363,475 by Dowling ("Dowling"). In view of the foregoing amendments, it is respectfully submitted that claims 1-87 as amended include limitations that are not disclosed by Dowling. Specifically, independent claim 1 recites as follows:

> 1. A method for dispatching instructions executed by at least one functional unit of a data processor, each one of the instructions having a corresponding priority number, in a computer system having at least one host processor and host memory, the method comprising:
>> in response to a next instruction, examining a current instruction group to determine if the current instruction group is completed, each instruction in the current instruction group associated with a priority number corresponding to a type of a functional unit executing the respective instruction, and wherein the current instruction group is formed based on a priority number of each instruction in the current instruction group and availability of the corresponding functional unit;
>> adding the next instruction to the current instruction group if the current instruction group is not completed; and
>> dispatching the current instruction group if the current instruction group is completed, wherein the current instruction group is completed when one or more predetermined conditions are satisfied.

(Emphasis added)

Independent claim 1 includes limitations that an instruction group may only be dispatched if the group is completed. A group is completed if one or more conditions are satisfied. Each of the instructions in the group is associated with a priority number corresponding to a type of functional unit executing the respective instruction. If the current group has not been completed, a next instruction will be put in the current group. If the

current group is completed, the current group will be dispatched and the next instruction will be put in a next group. It is respectfully submitted that the above limitations are absent from Dowling.

Although Dowling discloses dispatching different group of instructions from multiple instruction streams, Dowling still fails to disclose the group of instructions is dispatched only when the group is completed satisfying one or more predetermined conditions. In addition, although Dowling discloses assigning a priority to a stream of instructions, Dowling fails to disclose that each instruction is associated with a priority number corresponding to the type of functional unit for executing the respective instruction. See, for example, col. 3, line 31 to col. 4 line 7 of Dowling. Therefore, for the reasons discussed above, it is respectfully submitted that independent claim 1 is not anticipated by Dowling.

Similarly, independent claims 28, 55, and 82 include limitations similar to those recited in claim 1. Thus, for the reasons similar to those discussed above, independent claims 28 55, and 82 are not anticipated by Dowling.

Given that the rest of the claims depend from one of the above independent claims, at least for the reasons similar to those discussed above, it is respectfully submitted that the rest of the claims are not anticipated by Dowling.

In addition, with respect to claims 3-5, 30-32, and 57-59, these claims include limitations of examining the priority of the next instruction to determine whether the priority of the next instruction is higher than those in the current group. If so, the next instruction will be placed into the current group if the current group has not been completed. Otherwise the priority of the next instruction is lower than or equal to those in the current group, the current group will be dispatched without adding the next instruction and the next instruction will be added to a next group. If the next instruction is required to be in a next group and the current group has not been completed, a NOOP instruction may be inserted into the current group

before the current group is dispatched. It is respectfully submitted that the above limitations are absent from Dowling.

Examiner contends that sections of the Abstract, Figs. 4-5, col. 3, line 54-col. 4, line 6, col. 12, line 41-col. 13, line 36, and col. 4, lines 3-23 of Dowling discloses the above limitations (see, 12/13/2004 Office Action, pages 2-3). Applicant respectfully disagrees. The cited sections of Dowling are generally related to dispatching instructions. It is respectfully submitted that Dowling still fails to disclose the limitations set forth above. Therefore, in addition to those discussed with respect to their respective independent claims, for the separate reasons discussed above, claims 3-5, 30-32, and 57-59 are not anticipated by Dowling.

With respect to claims 8, 35, and 60, these claims include limitations of stalling a period of time based on the latency of the functional unit executing a next instruction during forming the group, which are absent from Dowling.

Examiner contends that section col. 12, lines 21-40 of Dowling reads on the above limitations. Applicant respectfully disagrees. The cited section of Dowling is related to stalling based on the length of multiple threads to ensure that all threads can be executed. Particularly, "if one parallel branch is longer than another, the shorter path will sit in a NOP loop until the longer path completes execution." (col. 12, lines 27-30 of Dowling). Thus, the cited section of Dowling is not related to forming a group of instruction, particularly, by taking into account of functional unit's latency. Therefore, in addition to those discussed with respect to their respective independent claims, for the separate reasons discussed above, claims 8, 35, and 60 are not anticipated by Dowling.

With respect to claims 15, 42, and 69, these claims are related to handling branch instructions when forming and dispatching a group of instructions. Specifically, these claims include limitations of examining the resources to be used by the branching instruction whether

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such resources are used or altered by non-branching instructions. If so, dispatching is suspended. It is respectfully submitted that these limitations are not disclosed by Dowling.

The Examiner contends that sections of col. 8, lines 40-58, col. 10, line 63-col. 11, line 26, and Fig. 7 of Dowling read on the above limitations. Applicant respectfully disagrees. The cited sections in general are related to handling VLIW dispatch and execution. There is no mention or suggestion within the cited sections of Dowling of the limitations set forth above. Rather, Dowling discloses that "instead of allowing the functional unit to stall, an instruction may be dispatched to the functional unit from a second instruction stream" (see, col. 11, lines 7-11 of Dowling). It appears that Dowling teaches away from the limitations set forth above. Therefore, in addition to those discussed with respect to their respective independent claims, for the separate reasons discussed above, claims 15, 42, and 69 are not anticipated by Dowling.

With respect to claims 21, 48, and 75, these claims include limitations that the instruction dispatch mechanism may be implemented within a system core logic that functions as a bridge, such as, for example, a north bridge, between a host processor and a host memory, and the rest of components of a data processing system. It is respectfully submitted that these limitations are also absent from Dowling.

The Examiner contends that Figs. 2, 4-5 of Dowling and their respective description read on the above limitations. Applicant respectfully disagrees. There is no disclosure or suggestion within Dowling that the sub-processor shown in Figs. 2 and 4-5 is implemented within a bridge between a host processor and host memory, and the rest of the components of a data processing system. Therefore, in addition to those discussed with respect to their respective independent claims, for the separate reasons discussed above, claims 21, 48, and 75 are not anticipated by Dowling.

Similarly, claims 24-26, 51-53, and 78-80 include limitations that are not disclosed by Dowling. As a result, separately, claims 24-26, 51-53, and 78-80 are not anticipated by Dowling.

In order to anticipate a claim, each and every limitations of the claim must be taught by the cited reference. For the reasons discussed above, it is respectfully submitted that claims 1-87 are not anticipated by Dowling.
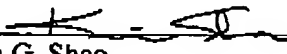
In view of the foregoing, Applicant respectfully submits the present application is now in condition for allowance. If the Examiner believes a telephone conference would expedite or assist in the allowance of the present application, the Examiner is invited to call the undersigned attorney at (408) 720-8300.

Please charge Deposit Account No. 02-2666 for any shortage of fees in connection with this response.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

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